JS 10/29/21
RJA 2/16/22

INITIAL REVIEW ENGINEERING REPORT [redacted]
PMN: 18-0212

Focus Ready Draft 7/5/2018
ENGINEER: Austin \ LMK
PV (kg/yr): [redacted]

SUBMITTER: Allnex USA Inc.

USE: Resin for coatings applied to glass substrates; the resin improves the coatings' appearence and adhesion.
[redacted]
Polymer Exemption case (E1).

OTHER USES: No other uses found.

MSDS: Yes Label: No

Gen Eqpt: Engineering controls are not usually necessary if good hygiene practices are followed. Wear eye/face protection such as chemical splash proof goggles or face shield. Avoid skin contact. Wear impermeable gloves. Wear protective gloves. Recommendations are listed below. Other protective materials may be used based on user's own risk assessment. Barrier creams may help to protect the exposed areas of the skin, they should however not be applied once exposure has occurred. Replace gloves immediately when torn or any change in appearance (dimension, color, flexibility etc.) is noticed.

Respirator: For operations where inhalation exposure can occur use an approved respirator. Recommendations are listed below. Other protective respiratory equipment may be used based on user's own risk assessment. Recommended respirators include those certified by NIOSH. Recommended: Full Face Mask with organic vapor cartridge, Type A filter (BP >65°C)

Health Effects: Not applicable
TLV/PEL:

CRSS (06/25/2018):
Chemical Name: [redacted]
S-H2O: Dispersible g/L @
VP: 1.0E-6 torr @
MW: 4453.00 1.20%<500 6.20%<1000
Physical State and Misc CRSS Info:
Neat: Solid (est.) Mfg: NK: Imported Proc/Form: Dispersion: [redacted] in aqueous formulation, then Dispersion: [redacted] in coating formulation End Use: Solid: PMN substance entrained in dried coating. The structure as drawn is representative. [redacted]
MW NAVG = 4453 with 1.2% < 500 and 6.2% < 1000, by GPC.
Submitted Data: density = 1.06 g/cm3. The MSDS is for a dispersion of the PMN substance in an aqueous formulation. This is described as a light yellow liquid that is dispersible in water.
Estimated Data: VP < 0.000001 torr (High MW salt); WS = dispersible (amine-neutralized structure). There is enough amine to neutralize [redacted] of the acrylic acid groups.

Consumer Use: No
SAT (concerns) (06/26/2018):
Related Cases and Misc SAT Info:
Analogs: [redacted]
Migration to groundwater: Negligible
PBT rating: P3B1T1
Health: 1-2 Dermal, Drinking Water, Inhalation, Other
Eco: 1 No releases to water

OCCUPATIONAL EXPOSURE RATING: [redacted]

NOTES & KEY ASSUMPTIONS:
Occupational exposure and environmental releases were estimated using the 9/30/2013 version of ChemSTEER tool. Input to ChemSTEER tool includes information from: the PMN submission, physical / chemical properties, relevant past cases, and the 2011 ESD on the Application of Radiation Curable Coatings, Inks, and Adhesives. This IRER is import only, therefore MFG is not assessed. SAT concerns are for dermal, drinking water, and inhalation exposures. Water releases are not a concern and migration to groundwater is negligible. // The following same-submitter, similar-use past cases were referenced for consistency: [redacted] // PROC: This IRER assesses releases from drum cleaning and equipment cleaning (consistent with [redacted] It also assesses dermal exposures from unloading (consistent with all past cases). // USE: This IRER assesses releases from drum cleaning, equipment cleaning, and spray coating (consistent with [redacted]). It also assesses dermal exposures from unloading and inhalation exposures from spray coating (consistent with [redacted].

POLLUTION PREVENTION CONSIDERATIONS:
None.
EXPOSURE-BASED REVIEW: [redacted]

INITIAL REVIEW ENGINEERING REPORT [redacted]

PMN: 18-0212

PROC: Coating Formulation

Number of Sites/ Location: [redacted]

unknown site(s)

Days/yr: [redacted]

Basis: The submission indicates [redacted], [redacted] PMN in the raw material, and [redacted] PMN in the product. RAD assumes [redacted] exposure days = operating days. CS calculates [redacted] kg PMN/batch.

Process Description: [redacted]

ENVIRONMENTAL RELEASES ESTIMATE SUMMARY

IRER Note: The daily releases listed for any source below may coincide with daily releases from the other sources to the same medium.

Water or Incineration or Landfill
High End: [redacted] kg/site-day over [redacted] days/yr from [redacted]
or [redacted] kg/site-yr from [redacted] or [redacted] kg/yr-all sites
to: uncertain
from: Equipment Cleaning Losses of Liquids from a Single, Large Vessel

basis: EPA/OPPT Single Vessel Residual Model, CEB standard 1% residual. The submission indicates that releases from equipment cleaning are not expected. RAD assesses this release using the standard model to uncertain media as conservative. Assumed gravity drained tank

Incineration
High End: [redacted] kg/site-day over [redacted] days/yr from [redacted]
or [redacted] kg/site-yr from [redacted] or [redacted] kg/yr-all sites
to: Incineration (per submission)
from: Cleaning Liquid Residuals from Drums Used to Transport the Raw Material
basis: EPA/OPPT Drum Residual Model, CEB standard 3% residual. [redacted] RAD assesses this release using the standard model as conservative.

RELEASE TOTAL
[redacted] kg/yr - all sites

OCCUPATIONAL EXPOSURES ESTIMATE SUMMARY
Tot. # of workers exposed via assessed routes: [redacted]
Basis: The submission estimates up to [redacted] workers may be exposed. RAD assumes that all workers perform all activities and that all workers may be exposed at the highest potential exposures for each physical form, as conservative.

Inhalation:

negligible (VP < 0.001 torr); mist generation is not expected during the operation.

Dermal:

Exposure to Liquid at [redacted] concentration
High End:
> Potential Dose Rate: [redacted]mg/day over [redacted] days/yr
> Lifetime Average Daily Dose: [redacted] mg/day over [redacted] days/yr
> Average Daily Dose: [redacted] mg/day over [redacted]days/yr
> Acute Potential Dose: [redacted] mg/day over [redacted] days/yr
Number of workers (all sites) with dermal exposure: [redacted]
Basis: Unloading Liquid Raw Material from Drums; EPA/OPPT 2-Hand Dermal Contact with Liquids Model. Per November 2016 RAD guidance, the following default parameters for this model were updated: body weight (BW) was updated from 70 to 80 kg and Averaging Time over a Lifetime (ATc) was updated from 70 to 78 years. Because of a ChemSTEER bug, these numbers were reversed to allow for calculation (BW = 78 kg and ATc = 80 years).

INITIAL REVIEW ENGINEERING REPORT [redacted]

PMN: 18-0212

USE: Coating Application

Number of Sites/ Location: [redacted]

unknown site(s)

Days/yr: [redacted]

Basis: The October 2011 ESD on the Application of Radiation Curable Coatings, Inks, and Adhesives provides default values of [redacted] operating days/year. For coatings, the ESD also recommends an annual use rate of [redacted] kg coating/site yr (for unknown coating). Therefore, Nsites = [redacted] kg PMN/yr)/ [[redacted] kg coating/site yr) x [redacted] PMN in coating)] = [redacted] sites. EPA assumes [redacted], [redacted] days/yr. CS calculates [redacted] kg PMN/site day.

Process Description: [redacted]

ENVIRONMENTAL RELEASES ESTIMATE SUMMARY

IRER Note: The daily releases listed for any source below may coincide with daily releases from the other sources to the same medium.

Water or Incineration or Landfill
High End: [redacted]kg/site-day over [redacted] days/yr from [redacted]
or [redacted] kg/site-yr from [redacted] or [redacted]kg/yr-all sites
to: water, incineration, or landfill (per ESD)
from: Cleaning Liquid Residuals from Drums Used to Transport the Raw Material
basis: EPA/OPPT Drum Residual Model, CEB standard 3% residual. The submission did not provide release estimates for the use of the coating. Container cleaning may involve an organic and water wash, which could be released to water, incineration, or landfill, per ESD.

Air
Typical: [redacted] kg/site-day over [redacted]days/yr from [redacted]
or [redacted] kg/site-yr from [redacted] or[redacted] kg/yr-all sites
Worst Case: [redacted] kg/site-day over 250 days/yr from [redacted]
or [redacted] kg/site-yr from [redacted] or [redacted] kg/yr-all sites
to: (4%), Incineration or Landfill (96%) (per model)
from: Process Releases from Spray Coating
basis: EPA/OPPT Automobile Refinish Coating Overspray Loss Model (non-volatiles). The submission did not provide release estimates for the use of the coating. Per the ESD, the user should assume the use of a conventional spray gun within a spray booth equipped with dry filter as default; this model assumes a spray booth efficiency of 90% and a solid removal efficiency of 100%. For this model, overspray releases are assessed to air (4%) and landfill or incineration (96%).

Incineration or Landfill
Typical: [redacted]kg/site-day over [redacted] days/yr from [redacted]
or [redacted] kg/site-yr from [redacted] or [redacted] kg/yr-all sites
Worst Case: [redacted] kg/site-day over 250 days/yr from [redacted]
or [redacted]kg/site-yr from [redacted] or[redacted] kg/yr-all sites
to: (4%), Incineration or Landfill (96%) (per model)
from: Process Releases from Spray Coating
basis: EPA/OPPT Automobile Refinish Coating Overspray Loss Model (non-volatiles). The submission did not provide release estimates for the use of the coating. Per the ESD, the user should assume the use of a conventional spray gun within a spray booth equipped with dry filter as default; this model assumes a spray booth efficiency of 90% and a solid removal efficiency of 100%. For this model, overspray releases are assessed to air (4%) and landfill or incineration (96%).

Incineration or Landfill
Conservative: [redacted] kg/site-day over [redacted]days/yr from [redacted]
or [redacted]kg/site-yr from [redacted] or [redacted] kg/yr-all sites
to: incineration or landfill (per ESD)

from: Equipment Cleaning Losses of Liquids from Multiple Vessels
basis: EPA/OPPT Multiple Process Vessel Residual Model, CEB standard 2% residual. The submission did not provide release estimates for the use of the coating. Per ESD, approximately one percent of used radiation curable product is lost during equipment cleaning at the application site with releases typically sent to incineration or land. EPA recommends using the EPA/OPPT Multiple Process Vessel Residual Model to conservatively estimate process losses from equipment cleaning if additional site specific information is not available.

RELEASE TOTAL
[redacted] kg/yr - all sites

OCCUPATIONAL EXPOSURES ESTIMATE SUMMARY
Tot. # of workers exposed via assessed routes: [redacted]
Basis: The ESD estimates an average of [redacted] workers per site may be exposed. RAD assumes that all workers perform all activities and that all workers may be exposed at the highest potential exposures for each physical form, as conservative.

Inhalation:

Exposure to Particulate (non-volatile) (Class I)
Upper Bound:
> Potential Dose Rate: [redacted] mg/day over [redacted] days/yr
> Lifetime Average Daily Dose: [redacted] mg/kg-day over [redacted] days/yr
> Average Daily Dose: [redacted] mg/day over [redacted] days/yr
> Acute Potential Dose: [redacted] mg/day over [redacted] days/yr
Number of workers (all sites) with inhalation exposure: [redacted]
Basis: Process Releases from Spray Coating; OSHA PNOR PEL-Limiting Model. November 2016 RAD guidance, default parameters for this model were updated: body weight (BW) was updated from 70 to 80 kg and Averaging Time over a Lifetime (ATc) was updated from 70 to 78 years.
Concentration: Cm = 2.1 mg/m3; exposure duration: h = [redacted] hr/day

NOTE: The respirator class is: I. Particulate (including solid or liquid droplets).

INHALATION MONITORING DATA REVIEW

1)	Uncertainty (estimate based on model, regulatory limit, or data not specific to industry):	Yes
2)a)	Exposure level > 1 mg/day?	Yes
	OR	
b)	Hazard Rating for health of 2 or greater? 1-2	No

=> Inhalation Monitoring Data Desired? **No**

Dermal:

Exposure to Liquid at [redacted] concentration
High End:
> Potential Dose Rate: [redacted] mg/day over [redacted] days/yr
> Lifetime Average Daily Dose: [redacted] mg/day over [redacted] days/yr
> Average Daily Dose: [redacted] mg/day over [redacted] days/yr
> Acute Potential Dose: [redacted] mg/day over [redacted] days/yr
Number of workers (all sites) with dermal exposure: [redacted]
Basis: Unloading Liquid Raw Material from Drums; EPA/OPPT 2-Hand Dermal Contact with Liquids Model. November 2016 RAD guidance, default parameters for this model were updated: body weight (BW) was updated from 70 to 80 kg and Averaging Time over a Lifetime (ATc) was updated from 70 to 78 years.